Section I (Amendments to the Claims)

1. (Original) A semiconductor process system including flow circuitry for flow of or with a process fluid, said system comprising:

a fluid sampling region for the process fluid;

an infrared radiation source constructed and arranged to transmit infrared radiation through the fluid sampling region;

a thermopile detector constructed and arranged to receive infrared radiation after the transmission thereof through the fluid sampling region and to responsively generate an output signal correlative of concentration of at least one selected component of the process fluid; and

process control means arranged to receive the output of the thermopile detector and to responsively control one or more process conditions in and/or affecting the semiconductor process system.

2. (Original) The semiconductor process system of claim 1, comprising a deposition chamber.

3. (Original) The semiconductor process system of claim 2, wherein the deposition chamber receives a chemical reagent from a chemical reagent source as a process fluid, and the thermopile detector is arranged to sense concentration of the chemical reagent process gas introduced to the deposition chamber.

4. (Original) Th semiconductor process system of claim 3, wherein the fluid sampling region is in a gas feed line delivering chemical reagent process fluid to the deposition chamber.

5. (Original) The semiconductor process system of claim 1, comprising an abatement unit for abating at least one component of said process fluid subsequent to its use in an upstream unit of the system.

6. (Original) The semiconductor process system of claim 5, wherein the upstream process unit comprises an epitaxial growth reactor.

7. (Original) The semiconductor process system of claim 5, wherein the upstream process unit comprises an ion implantation unit.

8. (Original) The semiconductor process system of claim 5, wherein the upstream process unit comprises a chemical vapor deposition chamber.

9. (Original) The semiconductor process system of claim 5, wherein the abatement unit comprises a scrubber.

10. (Original) The semiconductor process system of claim 9, wherein the scrubber comprises a wet scrubber.

11. (Original) The semiconductor process system of claim 10, wherein the wet scrubber is coupled to a scrubbing medium source.

12. (Original) The semiconductor process system of claim 11, wh rein flow of scrubbing medium from the scrubbing medium source to the abatement unit is modulated in response to concentration of a scrubbable component in the process fluid treated in the abatement unit, wherein the gas sampling region is upstream or downstream of the abatement unit.

13. (Original) The semiconductor process system of claim 12, wherein the fluid sampling region is upstream of the abatement unit.

14. (Original) The semiconductor process system of claim 12, wherein the gas sampling region is downstream of the abatement unit.

15. (Original) The semiconductor process system of claim 5, wherein the abatement unit comprises an oxidation unit.

16. (Original) The semiconductor process system of claim 15, wherein said abatement unit comprises a thermal oxidation unit.

17. (Original) The semiconductor process system of claim 15, wherein the abatement unit comprises a catalytic oxidation unit.

18. (Original) The semiconductor process system of claim 1, wherein the thermopile detector is constructed and arranged to monitor concentration of the process fluid, to determine approach to completion of an operation in the process system.

19. (Original) The semiconductor process system of claim 18, wherein at completion of the operation, the output of the thermopile detector is employed to change over a semiconductor process tool in the system to a subsequent operational step.

20. (Original) The semiconductor process system of claim 19, wherein the thermopile detector output is employed to alter a valve setting.

21. (Original) The semiconductor process system of claim 19, wherein the thermopile detector output is employed to initiate and/or terminate fluid flows in the system.

22. (Original) The semiconductor process system of claim 1, wherein the thermopile detector output is employed to modify a fluid flow rate in the system.

23. (Original) The semiconductor process system of claim 1, comprising a semiconductor process tool and an abatement unit treating fluid discharged from the semiconductor process tool, wherein the thermopile detector is arranged for monitoring one or more of:

fluid flowed to the semiconductor process tool,

fluid flowed from the semiconductor process tool to the abatement unit, and

fluid discharged from the abatement unit.

24. (Original) The semiconductor process system of claim 23, wherein the thermopile detector is arranged to monitor fluid flowed to the semiconductor process tool.

25. (Original) The semiconductor process system of claim 23, wherein the thermopile detector is arranged to monitor fluid flowed from the semiconductor process tool to the abatement unit.

26. (Original) The semiconductor process system of claim 23, wherein the thermopile detector is arranged to monitor fluid discharged from the abatement unit.

27. (Original) The semiconductor process system of claim 1, wherein output of the thermopile detector is used to modulate a set point of a mass flow controller.

28. (Original) The semiconductor process system of claim 1, wherein the output of the thermopile detector is used to modulate a recycle rate of a fluid treatment step or processing operation of the system.

29. (Original) The semiconductor process system of claim 1, wherein the fluid sampling region is in said flow circuitry.

30. (Currently amended) A method of operating a semiconductor process including processing of or with a fluid in a semiconductor process system having flow circuitry for flow of or with said fluid, said method comprising:

sensing concentration of a ~~desired~~ selected component of said fluid ~~with~~ by transmitting infrared radiation from an infrared radiation source through a fluid sampling region for said fluid and receiving the transmitted infrared radiation via a thermopile detector,

responsively generating an output signal from said thermopile detector correlative ~~indicative~~ of concentration of said selected component of said fluid, and

controlling one or more conditions in and/or affecting the semiconductor process~~,~~ in response to said output signal by using a process control means.

31. (Original) The method of claim 30, wherein the one or more conditions in and/or affecting the process include flow rate of a chemical reagent to a semiconductor process tool.

32. (Original) The method of claim 30, wherein the one or more conditions in and/or affecting the process include flow rate of a fluid stream discharged from or flowed to a process unit in the semiconductor process.

33. (Original) The method of claim 32, wherein the fluid stream to a semiconductor process tool is monitored.

34. (Original) The method of claim 32, wherein the fluid stream flowed to an abatement unit is monitored.

35. (Original) The method of claim 32, wherein the fluid stream discharged by an abatement unit is monitored.

36. (Original) The method of claim 30, wherein the thermopile sensor output is employed to modulate a valve.

37. (Original) The method of claim 30, wherein the thermopile detector output is employed to modulate a set point of a mass flow controller.

38. (Original) The method of claim 30, wherein the thermopile detector output is employed to modulate flow of a scrubbing medium in an abatement treatment step of the process.

39. (Original) The method of claim 30, wherein the thermopile detector output is employed to terminate a first process step and initiate a second process step.

40. (Original) The method of claim 30, wherein the thermopile detector output is employed to modulate recycle of a fluid stream in the process.